In the Claims

No claims have been cancelled or added.

Claim 30 has been amended.

Claims 1-48 remain in the application and are listed as follows:

1. (Original) In a paging operating system having physical memory for holding information and secondary storage comprising a page file for receiving information that is paged out from the physical memory, a computer-implemented method of protecting information comprising:

encrypting information using a key that is page-locked in the physical memory; and

paging out, to the page file, the encrypted information.

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2. (Original) The computer-implemented method of claim 1 further comprising prior to said encrypting, creating the key and page locking the key in the physical memory.

3. (Original) The computer-implemented method of claim 2, wherein said creating the key comprises creating the key during system boot up.

4. (Original) The computer-implemented method of claim 2, wherein said creating the key comprises generating a random key with a random key generator.

5. (Original) The computer-implemented method of claim 4, wherein said generating comprises using RSA RC4 as an encryption algorithm to generate the key.

6. (Original) The computer-implemented method of claim 1, wherein said encrypting comprises:

calling an operating system kernel;

the kernel using the page-locked key to encrypt the information.

7. (Original) The computer-implemented method of claim 6, wherein said calling is performed by an application.

8. (Original) The computer-implemented method of claim 6, wherein said calling is performed by an operating system memory manager.

9. (Original) One or more computer-readable media having computer-readable instructions thereon which, when executed by a computer, perform the computer-implemented method of claim 1.

10. (Original) An operating system programmed with instructions which, when implemented by the operating system, implement the method of claim 1.

11. (Original) In a paging operating system having main memory for holding information and secondary storage comprising a page file for receiving

information that is paged out from the main memory, a computer-implemented method of protecting information comprising:

page-locking a key in main memory;

restricting access to the page-locked key to only the operating system kernel;

calling the operating system kernel to encrypt information;

accessing the page-locked key with the operating system kernel; and

using the operating system kernel to encrypt the information with the page-locked key.

12. (Original) The computer-implemented method of claim 11, wherein said calling is performed by an operating system memory manager.

13. (Original) The computer-implemented method of claim 11, wherein said calling is performed by an application.

14. (Original) The computer-implemented method of claim 11 further comprising prior to said calling:

designating at least one page in the main memory with a designation;

recognizing the designation and, responsive thereto, calling the operating system kernel to encrypt the information.

15. (Original) The computer-implemented method of claim 14, wherein said recognizing is performed by the memory manager.

16. (Original) The computer-implemented method of claim 11, wherein said calling comprises specifying a memory location and a memory size associated with the information to be encrypted.

17. (Original) One or more computer-readable media having computer-readable instructions thereon which, when executed by a computer, perform the computer-implemented method of claim 11.

18. (Original) An operating system programmed with instructions which, when implemented by the operating system, implement the method of claim 11.

19. (Original) In a paging operating system having main memory for holding information and secondary storage comprising a page file for receiving information that is paged out from the main memory, a computer-implemented method of handling encrypted information comprising:

accessing encrypted information in the page file; and

decrypting the encrypted information with a key that is page-locked in the main memory.

20. (Original) The computer-implemented method of claim 19 further comprising placing the decrypted information in a page of main memory.

21. (Original) The computer-implemented method of claim 19 further comprising placing the decrypted information in a page-locked page of main memory.

22. (Original) The computer-implemented method of claim 19, wherein the page-locked key is accessible only to the operating system kernel.

23. (Original) One or more computer-readable media having computer-readable instructions thereon which, when executed by a computer, perform the computer-implemented method of claim 19.

24. (Original) An operating system programmed with instructions which, when implemented by the operating system, implement the method of claim 19.

25. (Original) In a paging operating system having main memory for holding information and secondary storage comprising a page file for receiving information that is paged out from the main memory, a computer-implemented method of protecting information comprising:

allocating a non-pageable page of main memory;

generating a random key; and

storing the random key in the non-pageable page of main memory, the random key being configured for use by the operating system to encrypt information that might be paged out to the page file.

26. (Original) The computer-implemented method of claim 25, wherein said generating comprises using an RSA RC4 encryption algorithm.

27. (Original) The computer-implemented method of claim 25, wherein said allocating takes place during system boot.

28. (Original) One or more computer-readable media having computer-readable instructions thereon which, when executed by a computer, perform the computer-implemented method of claim 25.

29. (Original) An operating system programmed with instructions which, when implemented by the operating system, implement the method of claim 25.

30. (Currently Amended) In an operating system having main memory for holding information and secondary storage for receiving information that is transferred out of main memory, a computer-implemented method of protecting information comprising:

generating at least one non-pageable random key by using a random key generation process;

encrypting at least one selected block of information in the main memory with a software component that uses the at least one random key for encryption;

transferring the one encrypted block of information to the secondary storage;

decrypting the one encrypted block of information with the software component that uses the at least one random key for decryption; and

placing the decrypted block of information in the main memory.

31. (Original) The computer-implemented method of claim 30, wherein said generating is performed during system boot up.

32. (Original) The computer-implemented method of claim 30 further comprising restricting access to the at least one random key to only the software component.

33. (Original) The computer-implemented method of claim 30, wherein the software component comprises the operating system's kernel.

34. (Original) The computer-implemented method of claim 30 further comprising:

storing the at least one random key in the main memory; and

locking the at least one random key in the main memory so that it does not get transferred to the second storage.

35. (Original) An operating system programmed with instructions which, when implemented by the operating system, implement the method of claim 30.

36. (Original) A system for use in protecting pageable information comprising:

a memory having pageable and non-pageable pages; and

at least one key stored in the memory in a non-pageable page, the key being configured for use in encrypting pageable information.

37. (Original) The system of claim 36 further comprising a software component that is configured to access and use said one key to encrypt pageable information.

38. (Original) The system of claim 37, wherein the one key is accessible only to the software component.

39. (Original) The system of claim 37 further comprising at least one application configured to call the software component to encrypt the pageable information.

40. (Original) The system of claim 37 further comprising a memory manager configured to call the software component to encrypt the pageable information.

41. (Original) A computer program embodied on one or more computer-readable media, the program comprising:

encrypting information with a key that is page-locked in main memory of a computer;

paging out, to secondary storage, the encrypted information;

accessing the encrypted information in the secondary storage; and

decrypting the encrypted information with the key that is page-locked in the main memory.

42. (Original) A programmable computer comprising:

a processor;

main memory for holding information;

secondary storage for receiving information that is temporarily transferred out of the main memory;

the computer being programmed with computer-readable instructions which, when executed by the processor, cause the computer to:

encrypt information that is to be transferred to the secondary storage with a key that is locked in the main memory;

transfer the encrypted information to the secondary storage; and

decrypt the encrypted information with a key that is locked in the main memory.

43. (Original) The programmable computer of claim 42, wherein the instructions cause the computer to generate the key and lock the key in the main memory.

44. (Original) The programmable computer of claim 42, wherein the key that is used to encrypt the information is the same key that is used to decrypt the information.

45. (Original) The programmable computer of claim 42, further comprising a software component that is programmed to encrypt and decrypt the information.

46. (Original) The programmable computer of claim 45, wherein the software component comprises the operating system's kernel.

47. (Original) One or more application programming interfaces embodied on one or more computer-readable media for execution on a computer in conjunction with a paging operating system having main memory for holding information and a page file for receiving information that is paged out from the main memory, comprising:

an interface method for encrypting pageable information with a key that is page-locked in the main memory; and

an interface method for decrypting encrypted information that is contained in the page file.

48. (Original) An application programming interface embodied on a computer-readable medium for execution on a computer in conjunction with a paging operating system having main memory for holding information and secondary storage comprising a page file for receiving information that is paged out from the main memory, comprising a method for setting an attribute on a page of main memory, the attribute designating that the page must be encrypted with a key that is page-locked in the main memory prior to the page being paged out to the page file.